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UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE

FOURTEENTH ANNUAL REPORT

OF THE

CENTRAL STATES FOREST EXPERIMENT STATION

FOR THE YEAR 1942

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February 15, 1943

Fourteenth Annual Report
of the
Central States Forest Experiment Station
for the year 1942

Almost complete conversion of Station efforts from a peacetime to a war program characterized the work of 1942. Limited funds and personnel made it impossible for the organization to absorb the new war projects and maintain any more than a minimum of regular work which will be of value in postwar forestry programs.

Progress was made in completing phases of regular work not finished in 1941. This was accomplished by publication, acceptance or submission of nine manuscripts. Four, all virtually complete, remain to be submitted in 1943. This will clean up those prewar jobs which were near enough completion so that publication could be accomplished with a minimum of time.

Regular work of particular postwar importance that has occupied our attention during the past year and will be continued during the next includes (a) preparation of recommendations for stand improvement in the Missouri Ozarks and (b) a similar compilation on planting. Both jobs consist primarily of assembling and integrating the results of many individual studies and interpreting them in terms of practical recommendations. Responsibilities of Station personnel are such that the most progress in 1943 is expected in connection with the recommendations for stand improvement in the Ozarks. Liming, who has done much of the work in this region, will not be fully occupied on products

supplies jobs and will be responsible for the first of the postwar projects mentioned above. Recommendations will deal with improvement of existing stands primarily from the standpoint of introducing shortleaf pine and treatment of the existing hardwoods to insure establishment of both natural and introduced pine. Although work done thus far has dealt largely with introduction of pine through planting and treatment of the hardwood overstory, more recent work has shown that direct seeding in spots has unusually good promise. First-season results from six small plots located in blackjack oak stands typical of those needing improvement showed that 87 percent of the spots were occupied by one or more seedlings. Field establishment of rather comprehensive experiments of spot seeding to further test the results of these small-scale exploratory studies will be completed by March 1948, after which periodic reexamination will be all the field work required. The active cooperation and interest of personnel on the National Forests in Missouri have made possible this and much of the other Ozark work on stand improvement.

Progress on integrating into a comprehensive picture the results of our many planting studies will depend entirely upon the amount of time remaining after products supplies work has been taken care of. Chapman, who has had active charge of regeneration work, is the key man in preparation of planting recommendations, and his time is now well occupied with WFB surveys.

From the contacts thus far made I have the distinct impression that many of our customers, particularly foresters in the SCS, State and Extension Services, have little realization of the wide scope of

from counties thus far covered, Wayne Purchase Unit acquisition surveys and other information, will be prepared. The Station contributed materially in planning this State report. Of particular interest will be an estimate of the growth-drain balance. A considerable amount of unexploited information on growth is available in Station files and will be used in this part of the job.

An outstanding accomplishment was completion and submission of a manuscript reporting the results of ten years research on the ecology of the central hardwood forest with reference to soil-forest relations. This work clarified certain relations that are fundamental to an understanding of the factors governing reforestation and forest management in the Central States.

A written report of the results of five years research on the effects of fertilizers and soil amendments on shortleaf and pitch pine seedlings in forest tree nurseries was completed and submitted for publication in the Journal of Agricultural Research. This work was planned and executed to meet difficulties experienced in new nurseries. The findings involved clarification of certain soil-seedling relations that are universally applicable in this region.

Outstanding needs in Station territory include an evaluation of existing forest resources to determine the contribution they are making and can make to regional prosperity. This was well reviewed in the report of last year. In addition there is an outstanding need for specific recommendations regarding woodland management. Thus far recommendations are largely in terms of generalities, each subject in application to individual interpretation with resulting wide variations

in practice. In other words silviculture and valuation are proceeding pretty largely on a "hunch" basis. Additional studies needed to remedy this situation are determination of the lumber grade yields of trees of different sizes, volume growth rates for individual species by size and age classes and means for determining defect volume from external characteristics. The results from these studies would provide practical bases for sound practices within the general framework of all-aged management.

The need of better marketing outlets for farm woodland products is well recognized and has been reviewed in past reports. A first step in meeting this need was taken during the past year with establishment of six farm woodland products marketing project areas in Iowa, Missouri and Illinois. An additional one in Ohio will probably be established early in 1943.

However, manufacturing of local forest products presents an associated problem needing consideration in a comprehensive research program. An impressive comparison exists between the skill and efficiency exhibited in the harvest and primary processing of agricultural crops and the lack of it in harvesting and processing the forest crops. In many areas woods skill has been lost. Many farmers have grown prejudiced against local lumber because of its poor processing. However, with the current shortage of softwood construction lumber farmers would gladly use the softer hardwoods for siding on livestock shelters and other buildings, but even the simplest remanufacturing facilities were not available in many areas. A major question to be answered in connection with manufacturing studies is whether more efficient and

complete portable mills or larger permanent ones will best serve the needs of various sections.

Some basis for studies of this kind was laid during 1942 as a result of the lumber census and the inventory of secondary wood-using industries. Station territory excluding Kentucky and Tennessee but including Kansas and Nebraska was found to contain 6,500 sawmills and 6,300 secondary wood-using industries. As a result of this work we are in a position to determine the present structure of our wood-processing plants.

Completion of studies in farm woodland economics, management and valuation, manufacturing and marketing, should provide the basis for a well-rounded program of extension in farm forestry but considerably more will be needed in the Corn Belt. Even though completion of a forest research program might go far in selling forestry in the hills, there is doubt that it would get very far in the Corn Belt. Here the main interest is centered in production of agricultural crops and the contribution of good woodland practice to the whole farm enterprise must eventually be determined. Major farm income is derived from cultivated land and always will be even though good practice and improved markets would raise woodland income to many times its present level. Studies are needed to indicate how general farm prosperity is influenced by a pattern of well-managed woodlands.

Two specific lines of work occur to us now that may offer promise. First a determination of how the presence of woodlands affects the yield of crops on adjoining land, and second an evaluation of how the existing woodlands would, if well-managed, contribute to control of

present ground water levels. The latter is currently of much concern in the Central States. It is apparently a well-established fact now that a falling water table is limiting industrial expansion in some areas. The well-drilling trade still thrives in many sections not because of establishment of new homesteads but because of need for deepening existing wells. Some scattered research results which bear on these two points are available. Time that can be spared from products supplies work is being spent in correlating these results with the idea of preparing a publication to stimulate thought and interest along these lines.

Activities on the war program during 1942 included estimates of the volume of airplane veneer and walnut gunstock stumpage in the territory, preparation of working plans for and execution of the census of lumber production in 1941, monthly surveys of lumber production, quarterly surveys of mill stocks and factors affecting production, and assistance to the Washington Office in conducting surveys of monthly veneer production and dry-kiln capacity. Other activities included an evaluation of the status of cutting practices on private forest land in cooperation with Region Five, the reporting of critical shortages of forest products which helped emphasize the threat to food production presented by depleted softwood lumber inventories in retail yards, and continued cooperation with the Ohio Forest Survey. A few of these merit special discussion.

Sampling of sawmill population for reliable figures of monthly lumber production requires contact with 487 mills in order to attain the standards of accuracy assumed to be desirable by the Station.

Contact with these mills has been accomplished by employment and location at field offices of six men to cover Kansas, Nebraska, Iowa, Missouri and Illinois. Field work in Ohio and Indiana was assigned to four of the regular staff from Columbus. In addition Supervisors of the Wayne, Heosier and Shawnee National Forests assumed responsibilities for the work in territories inside and adjacent to their purchase boundaries. The Missouri Forests made initial contacts on a similar basis but because of the heavy fire load on these Forests subsequent necessary action has been gradually absorbed by the Station field force.

Although every effort has been made to obtain all returns by mail a certain amount of field travel is essential. Some delinquency in reporting and the need of choosing alternates for mills which no longer care to cooperate are major reasons for incurring field expenses. Average travel time has been 8.6 days per man each month including the original contact. This includes extra time spent in getting information on factors affecting production and shortages of forest products. I have the impression from communications received from you that we are expected to get such information as the latter at little or no extra cost. However, we have not been able to get information on such matters worth reporting to you without spending extra time in contacts and travel. The indirect approaches necessarily used contribute considerably to such extra time.

An outstanding problem that has become apparent from our industry contacts is the need for more rapid dissemination of simplified information on rationing, draft deferments, price ceilings, and other Govern-

ment orders. The small producer needs simplified instructions on what to do and where to go to do it. Lack of such information is affecting production in many intangible ways not well accounted for in our quarterly report on factors.

We have attempted to help out by preparing mimeographed summaries of orders and procedures to follow and issuing these in answer to individual inquiries and also to our field men for further dissemination. This job became large enough so that one man has been assigned responsibility for preparing a monthly summary of recent orders affecting the industries. This is a type of service ordinarily rendered by industry associations but the North Central Lumber Producers Association organized last fall is reaching only the largest producers in the territory.

These efforts are, of course, filling only a small portion of the needs. The revised FPS plan provided for services to meet this problem. My understanding of the present situation is that many of the functions of the revised FPS plan will be absorbed by WPA. If so, the Station can be of considerable assistance and we plan to offer the information we have available to local WPA offices.

We plan to accomplish the lumber census of 1942 largely with present personnel and without calling upon the assistance of other agencies. Sawmill lists have already been greatly improved over those of last year by contributions of cooperating agencies and our own field force. It is anticipated that mill returns of 1942 production will be much better both proportionately and in total numbers than last year. With WPA going out of the picture and inability to replace

these with other workers we have had to revise and restrict the amount of Station tabulation of Census returns. This work will be limited to only the essential demands of the Census.

The confidential nature of results from the present Station program is a handicap in several ways. Other public forestry and conservation agencies know in general that results of our present work would be very useful in their own programs. The recent liberalization of the policy governing release of NPB survey results does not permit us to furnish such results to State Forest and Extension Services and others. The results are poor mobilization of other public agencies in solving current problems and sometimes initiation of special surveys duplicating work already done.

Mimeographed Station Releases

1. Kellogg, L. F. The 1941 production of black walnut lumber in the corn belt states. Tech. Note 55. ✓

2. Volume tables:

Emmer, R. E. Volume table for pin oak (*Quercus palustris*) in Columbiana, Portage, Richland and Trumbull counties, Ohio. Tech. Note 50. ✓ 1941

Kellogg, L. F., R. E. Emmer, and Daniel DenUyl. Volume table for black and sugar maple (*Acer nigrum* and *A. saccharum*) in Marshall county, Indiana. Tech. Note 51. ✓ 1941

Emmer, R. E., and J. Richard Cramer. Volume table for black oak (*Quercus velutina*) in Holmes county, Ohio. Tech. Note 52. ✓ 1941

Emmer, R. E., and W. O. Schramm. Volume table for northern red and scarlet oaks (*Quercus borealis* and *Q. coccinea*) in Franklin county, Ohio. Tech. Note 53. ✓ 1941

Emmer, R. E., J. G. Kuensel, and L. F. Kellogg. Volume table for white oak (*Quercus alba*) in Union, Jackson, and Hardin counties, Illinois. Tech. Note 54. ✓

Articles Published

1. Chapman, A. G. Forests of the Illinoian till plain of southeastern Indiana. Ecology 23: 2. ✓
2. McLintock, Thomas F. Stratification as a means of improving results of direct seeding of pines. Jl. of For. 40: 9. ✓
3. Kramer, Paul R., and Edward E. Sturgeon. Transect method of estimating forest area from aerial photograph index sheets. Jl. of For. 40: 9. ✓
4. Cummings, William Hawke. Exposure of roots of shortleaf pine stock. Jl. of For. 40: 6. ✓
5. Kuensel, John G., and John R. McGuire. Response of chestnut oak reproduction to clear and partial cutting of overstory. Jl. of For. 40: 3. ✓
6. Liming, Franklin G. Blackjack oak in the Missouri Ozarks. Jl. of For. 40: 3. ✓

Articles Accepted for Publication

1. Liming, Franklin G. Relative height growth of planted shortleaf pine and cut-back and uncut hardwood reproduction after release. (Jl. of For.)

Manuscripts Completed and Submitted for Publication

1. Auten, John T. Some ecological aspects of the central hardwood forest with special reference to the soil profile. 234 pp. (Tech. Bul.)
2. Auten, John T. Response of shortleaf and pitch pines to soil amendments and fertilizers in newly established nurseries in the central states. 48 pp. (Jl. Agr. Research)

Manuscripts Essentially Complete

1. Chapman, A. G. A test of shortleaf pine stock classes for type conversion planting in the Missouri Ozarks. ✓
2. Cummings, W. H. Nutrition of black locust in fertilized field plantings.
3. McLintock, T. P., and John J. Van Akkeren. Direct seeding of pine species under old-field conditions in Ohio.
4. Liming, Franklin G. Reproduction in oak-hickory stands of the Missouri Ozarks. ✓

Station Personnel

Administration

Leonard I. Barrett
Berniece D. Dillon
Charlotte D. Huston
Vacant 1/
Jeanne F. Grosh
Mildred C. Breese
Beatrice R. Gibbs
Cecil L. Stauder
Vacant 2/
Ervin E. Hollingshead

Director
Jr. Adm. Asst.
Clerk - Typist
Statistical Clerk
Asst. Clerk - Steno.
Asst. Clerk - Typist
Jr. Clerk - Steno.
Jr. Clerk - Typist
Messenger
Janitor

Forest Management

Arthur G. Chapman, In Charge
John T. Auten
Ralph K. Day
Leonard F. Kellogg
Franklin G. Liming
Vacant

Silviculturist
Silviculturist
Silviculturist
Silviculturist
Asso. Silviculturist
Asst. Silviculturist

Forest Economics

Robert E. Worthington

Forest Economist

- 1/ Robert E. Emmer - Military furlough
2/ Walter S. Krysiak - Military furlough

FOREST PRODUCTS

Requirements and Supplies Surveys

Arthur G. Chapman, In Charge
John T. Auten
Ralph K. Day
Leonard F. Kellogg
Franklin G. Liming
Richard B. Campbell
Thos. F. McIntook
Euge W. Richman
Eugene W. Forbes
Milton G. Moyer
Richard D. Lane
Fredrick B. Malcolm

Silviculturist
Silviculturist
Silviculturist
Silviculturist
Asso. Silviculturist
Asst. Forester
Asst. Forester
Asst. Forester
Asst. For. Economist
Asst. For. Economist
Jr. Forester
Jr. Forester

Lumber Census

Leonard F. Kellogg
Robert E. Worthington

Silviculturist
Forest Economist

Secondary Wood-Using Industries

Ralph K. Day

Silviculturist

Financial Report

1. Direct and indirect cost by financial projects.

Financial project	Indirect project costs : (overhead)	Direct : project costs	Total : costs
Forest Management	16,414	23,500	39,914
Forest Economics	4,341	4,350	8,691
TOTAL	20,755	27,850	48,605
Coop. Farm Forestry	-	2,000	2,000
Products - Supplies Surveys	-	13,400	13,400 ^{1/}
GRAND TOTAL	20,755	43,250	64,005

2. Distribution of direct costs by main projects.

Financial and work project	Car main- tenance	Scientific equipment and project supplies	Travel expenses other than cars	SALARIES Regular, Temporary,	Total	
<hr/>						
Forest Management						
Silviculture	170	100	180	14,600	350	15,400
Mensuration	-	-	-	5,600	-	5,600
Regeneration	10	-	20	2,470	-	2,500
TOTAL	180	100	200	22,670	350	23,500
<hr/>						
Forest Economics						
Farm Woodlands	-	-	-	4,350	-	4,350
Coop. Farm Forestry	-	905	112	-	985	2,000
Products - Supplies	1,000	550	3,200 ^{2/}	8,650	-	13,400
GRAND TOTAL	1,180	1,555	3,512	35,670	1,335	43,250

^{1/} Total WPB allotment received to date.

^{2/} Includes \$900 travel allotment made R - 9 NF's and RO.

R-CS

REPORTS

Station's Annual

FOREST MANAGEMENT

Sat. Jan. 30, 1943

	<u>Direct</u>			<u>Indirect</u>		
	<u>500</u>	<u>505</u>	<u>510</u>	<u>500</u>	<u>505</u>	<u>510</u>
Perm. Salary	13,595	5,160	2,194	6,075	3,750	3,155
Overtime	1,022	426	255	495	206	123
Temp. Salary	350*	-	-	1,370	440 40	41
Travel	200*	-	-	834**	-	-
Communication	104	42	25	-	-	-
S & M	100	-	-	113	-	-
	<u>15,371</u>	<u>5,628</u>	<u>2,474</u>	<u>8,887</u>	<u>3,996</u>	<u>3,319</u>

Total Direct = \$23,473

Total Indirect = \$16,202

* Dr. Liming's

** Includes \$354 expended for travel thru 12-31-42. \$480 balance available expend. balance F.Y.

	<u>675</u> Direct	<u>FOREST ECONOMICS</u>	<u>675</u> Indirect
Perm. Sal (REW & BDD)	4,000)		2,383)
	312) Overtime		282)
	35)		31)
Travel, Director			392
Librarian			275
Overhead Exp.			<u>981</u>
	<u>\$ 4,347</u>		<u>\$ 4,344</u>

COOPERATIVE FARM FORESTRY

<u>S&M</u>	<u>Travel</u>	<u>Salaries</u>
903	112	240
		217
		<u>457</u>
		528
		<u>985</u>

PRODUCTS & SUPPLIES

<u>Car Maintenance</u>	<u>S&M</u>	<u>Travel Other than Car</u>	<u>Salaries</u>	<u>Total</u>
1,000	550	3,200 *	8,650	13,400

* Includes \$900 travel allotment made R-9 NF's & RO